

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

Report Date: December 23, 2016

Project: Solvay

Submittal Date: 12/02/2016 Group Number: 1739986 State of Sample Origin: NJ

Client Sample DescriptionLancaster LabsV915 Grab Water8726063Field Blank Grab Water8726064

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Solvay Attn: Mitch Gertz
Electronic Copy To Solvay Attn: Mark Christensen
Electronic Copy To Integral Consulting Inc. Attn: Erin Palko
Electronic Copy To Integral Consulting Inc. Attn: Craig Hutchings

Respectfully Submitted,

Stacy L. Hess Project Manager

(717) 556-7236



Lancaster Laboratories Environmental

Analysis Report

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Sample Description: V915 Grab Water

LL Sample # WW 8726063 LL Group # 1739986 Account # 20003

Project Name: Solvay

Collected: 11/30/2016 15:00 by MC

Integral Consulting Inc.

Suite 190

Submitted: 12/02/2016 09:10 Reported: 12/23/2016 09:30

285 Century Place Louisville CO 80027

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
Misc.	Organics EPA 537	Rev 1.1	ng/l		ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	80		0.5	2	1
10954	Perfluorononanoic acid	375-95-1	470		6	20	10
10954	Perfluorodecanoic acid	335-76-2	5		0.5	2	1
10954	Perfluoroundecanoic acid	2058-94-8	15		1	3	1
10954	Perfluorododecanoic acid	307-55-1	N.D.		0.5	2	1
10954	Perfluorotridecanoic acid	72629-94-8	N.D.		0.5	2	1
10954	Perfluorotetradecanoic acid	376-06-7	N.D.		0.5	2	1
10954	Perfluorohexanoic acid	307-24-4	6		0.5	2	1
10954	Perfluoroheptanoic acid	375-85-9	8		0.5	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.		0.7	2	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.		1	3	1
10954	Perfluoro-octanesulfonate	1763-23-1	3	J	2	6	1

Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ıe	Analyst	Dilution Factor
10954	PFAS in Water by LC/MS/MS	EPA 537 Rev 1.1	1	16340008	12/09/2016	08:36	Marissa C Drexinger	1
10954	PFAS in Water by LC/MS/MS	EPA 537 Rev 1.1	1	16340008	12/09/2016	22:02	Atulbhai Patel	10
14091	PFAA Water Prep	EPA 537 Rev 1.1	1	16340008	12/06/2016	14.40	Devon M Whoolev	1

^{*=}This limit was used in the evaluation of the final result



Lancaster Laboratories Environmental

Analysis Report

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Sample Description: Field Blank Grab Water

LL Sample # WW 8726064 LL Group # 1739986 Account # 20003

Project Name: Solvay

Collected: 11/30/2016 15:00 by MC

Integral Consulting Inc.

Suite 190

Submitted: 12/02/2016 09:10 Reported: 12/23/2016 09:30

285 Century Place Louisville CO 80027

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Misc.	Organics EPA 537	Rev 1.1	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	N.D.	0.5	2	1
10954	Perfluorononanoic acid	375-95-1	N.D.	0.6	2	1
10954	Perfluorodecanoic acid	335-76-2	N.D.	0.5	2	1
10954	Perfluoroundecanoic acid	2058-94-8	N.D.	1	3	1
10954	Perfluorododecanoic acid	307-55-1	N.D.	0.5	2	1
10954	Perfluorotridecanoic acid	72629-94-8	N.D.	0.5	2	1
10954	Perfluorotetradecanoic acid	376-06-7	N.D.	0.5	2	1
10954	Perfluorohexanoic acid	307-24-4	N.D.	0.5	2	1
10954	Perfluoroheptanoic acid	375-85-9	N.D.	0.5	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	0.7	2	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.	1	3	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	2	6	1

Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAS in Water by LC/MS/MS	EPA 537 Rev 1.1	1	16340008	12/09/2016 09:09	Marissa C Drexinger	1
14091	PFAA Water Prep	EPA 537 Rev 1.1	1	16340008	12/06/2016 14:40	Devon M Whooley	1

^{*=}This limit was used in the evaluation of the final result

Lancaster Laboratories Environmental

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Quality Control Summary

Client Name: Integral Consulting Inc. Group Number: 1739986

Reported: 12/23/2016 09:30

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result ng/l	MDL** ng/l	LOQ ng/l
Batch number: 16340008	Sample number	(s): 87260	63-8726064
Perfluorooctanoic acid	N.D.	0.5	2
Perfluorononanoic acid	N.D.	0.6	2
Perfluorodecanoic acid	N.D.	0.5	2
Perfluoroundecanoic acid	N.D.	1	3
Perfluorododecanoic acid	N.D.	0.5	2
Perfluorotridecanoic acid	N.D.	0.5	2
Perfluorotetradecanoic acid	N.D.	0.5	2
Perfluorohexanoic acid	N.D.	0.5	2
Perfluoroheptanoic acid	N.D.	0.5	2
Perfluorobutanesulfonate	N.D.	0.7	2
Perfluorohexanesulfonate	N.D.	1	3
Perfluoro-octanesulfonate	N.D.	2	6

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 16340008	Sample number	r(s): 87260	63-8726064						
Perfluorooctanoic acid	200	194.11	200	191.01	97	96	70-130	2	30
Perfluorononanoic acid	200	169.52	200	177.16	85	89	70-130	4	30
Perfluorodecanoic acid	200	170.85	200	194.57	85	97	70-130	13	30
Perfluoroundecanoic acid	200	157.04	200	165.45	79	83	70-130	5	30
Perfluorododecanoic acid	200	170.14	200	187.85	85	94	70-130	10	30
Perfluorotridecanoic acid	200	200.06	200	195.18	100	98	70-130	2	30
Perfluorotetradecanoic acid	200	211.13	200	203.36	106	102	70-130	4	30
Perfluorohexanoic acid	200	176.99	200	202.99	88	101	70-130	14	30
Perfluoroheptanoic acid	200	167.91	200	170.17	84	85	70-130	1	30
Perfluorobutanesulfonate	176.8	160.84	176.8	161.75	91	91	70-130	1	30
Perfluorohexanesulfonate	189.2	172.16	189.2	174.34	91	92	70-130	1	30
Perfluoro-octanesulfonate	191.2	176.7	191.2	181.13	92	95	70-130	2	30

P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

^{*-} Outside of specification

^{**-}This limit was used in the evaluation of the final result for the blank

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.



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Analysis Report

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Quality Control Summary

Client Name: Integral Consulting Inc. Group Number: 1739986

Reported: 12/23/2016 09:30

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16340008	Sample numb	er(s): 8726	5063-8726	064 UNSPK: 8	3726063					
Perfluorooctanoic acid	79.77	199.34	253.13			87		70-130		
Perfluorononanoic acid	465.79	199.34	637.23			86		70-130		
Perfluorodecanoic acid	4.62	199.34	179.57			88		70-130		
Perfluoroundecanoic acid	15.12	199.34	181.42			83		70-130		
Perfluorododecanoic acid	N.D.	199.34	201.9			101		70-130		
Perfluorotridecanoic acid	N.D.	199.34	223.49			112		70-130		
Perfluorotetradecanoic acid	N.D.	199.34	172.69			87		70-130		
Perfluorohexanoic acid	6.45	199.34	258.14			126		70-130		
Perfluoroheptanoic acid	7.68	199.34	184.92			89		70-130		
Perfluorobutanesulfonate	N.D.	176.22	172.51			98		70-130		
Perfluorohexanesulfonate	N.D.	188.58	194.84			103		70-130		
Perfluoro-octanesulfonate	3.00	190.57	192.24			99		70-130		

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

^{*-} Outside of specification

^{**-}This limit was used in the evaluation of the final result for the blank

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

CT RCP

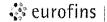
MA MCP

NYSDEC Category A or B

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(If yes, indicate QC sample and submit triplicate sample volume.)

Temperature upon receipt



Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

169624

Group Number(s): 1739986

Client: Solray

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

12/02/2016 9:10

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes No

Missing Samples:

No

Extra Samples:

No

Unpacked by Cathy Murphy (10960) at 15:19 on 12/02/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

1

Cooler # Thermometer ID DT146

Corrected Temp 2.0

Discrepancy in Container Qty on COC:

Therm, Type DΤ

Ice Type Wet

Ice Present? Υ

Ice Container Bagged

Elevated Temp? Ν



Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL Below Minimum Quantitation Level mq milligram(s) degrees Celsius mĹ milliliter(s) C cfu colony forming units MPN Most Probable Number **CP Units** cobalt-chloroplatinate units N.D. none detected F degrees Fahrenheit ng nanogram(s) nephelometric turbidity units gram(s) NTU g IÚ International Units pg/L picogram/liter kilogram(s) RLkg Reporting Limit **TNTC** liter(s) Too Numerous To Count pound(s) lb. microgram(s) μg μĹ microliter(s) m3 cubic meter(s) milliequivalents umhos/cm micromhos/cm meg

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

as-received basis.

Laboratory Data Qualifiers:

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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